AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remain(s) under examination in the application is presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1-42. (Cancelled)

43. (Currently Amended) An instrument ~~according to Claim 42, wherein,~~ for studying an object, comprising an interferometer having a source of coherent object light and a source producing a reference beam which is coherent with the object beam, and detector, in which; the coherent light source is expanded and arranged to direct a converging object beam towards a point beyond the object and to produce a reflected object beam reflected from the object; the reflected object beam and reference beam combine to produce a speckle pattern of light representing the effects of the reflection from the object; and the speckle pattern is detected by the detector, wherein:

the detector comprises a plurality of arrays of detectors;

the detector arrays are arranged in a line extending in the direction of movement of the instruments;

the instrument further includes means for generating at least one additional converging laser beam;

there are at least three detector arrays, each arranged to detect a speckle pattern of light reflected from a respective laser beam; and

the three detector arrays are arranged to have three different sensitivity directions.

44. (Currently Amended) A method of conducting an interferometric study of an object, ~~which comprises~~ further comprising: deploying an instrument comprising an interferometer having a source of coherent object light and a source producing a reference beam which is

coherent with the object beam, and detector [[means]] in the vicinity of the object; expanding the coherent light source; directing a converging object beam of coherent light from the expanded source on to the surface of the object; moving the instrument relative to the object while maintaining a substantially constant distance between them, whereby the beam tracks across the surface of the object; combining the reflected object beam with the reference beam thereby producing a speckle pattern; detecting at intervals the speckle pattern using the detector [[means]]; comparing sequential intensities in the speckle or speckle patterns detected in order to identify changes in the intensity of the speckle patterns; and creating a set of data representing the changes.

45. (Currently Amended) A method according to Claim 44, wherein the detector [[means]] comprises an array of detectors.

46. (Previously Presented) A method according to Claim 44, wherein the speckle pattern comprises a single speckle.

47. (Previously Presented) A method according to Claim 44, wherein the converging object beam and reference beam are laser beams.

48. (Previously Presented) A method according to Claim 44, wherein changes of intensity identified in sequential speckles or speckle patterns are associated with movements of the surface of the object.

49. (Previously Presented) A method according to Claim 44, wherein the converging object beam is arranged to converge to a position approximately the same distance beyond the object as the object is spaced from the source.

50. (Previously Presented) A method according to Claim 49, wherein [[the]] said position is selected from the group consisting of a point and a line.

51. (Currently Amended) A method according to Claim 44, wherein the instrument has a speed of movement, the detector [[means]] has a sampling rate, and the object is illuminated by the converging object beam over an area having a size, the speed of movement of the instrument, the sampling rate of the detectors and size of the area of the object illuminated by the converging object beam being arranged so that sequential areas of the object studied overlap.

52. (Currently Amended) A method according to Claim 47, ~~which comprises~~ further comprising directing at least one additional converging object laser beam on to the surface of the object, combining the respective reflected object beams with a reference beam, and detecting the resulting speckle pattern intensity using respective detectors [[means]].

53. (Previously Presented) A method according to Claim 52, wherein the detector arrays have different sensitivity directions.

54. (Previously Presented) A method according to Claim 52, wherein the various laser beams are directed to different areas on the surface of the object.

55. (Currently Amended) A method according to Claims 44, ~~which additionally includes~~ further comprising the step of filtering out of the data, movement of the instrument and any incidental displacements of the instrument.

56. (Currently Amended) A method according to Claim 44, further ~~including~~ comprising the step of generating a seismic event, whereby movements in the surface of the object represent responses to the seismic event.

57. (Previously Presented) A method according to Claim 56, wherein the object is the sea bed.

58. (Currently Amended) A method of conducting a seismic survey ~~which comprises~~ comprising:

generating a seismic event[[,]];

applying the seismic event to the earth's surface;

deploying in the vicinity of the earth's surface an instrument ~~comprising means for generating~~ that generates a plurality of expanded and converging object beams of coherent light from at least one source, ~~means for generating~~ a plurality of reference beams which are spatially

and temporally coherent with the respective object beams, and a plurality of corresponding detector arrays;

directing [[the]] converging [[laser]] object beams on to the surface of the earth to produce reflected object beams;

moving the instrument relative to the earth's surface at a constant distance above the earth's surface whereby [[the]] source beams track across the earth's surface;

combining the reflected object beams with [[the]] respective reference beams to produce a plurality of respective speckle patterns;

detecting at intervals the speckle patterns using [[the]] detector arrays;

comparing, for each object beam, sequential speckle patterns detected in order to identify changes in the intensity of the speckle patterns resulting from movements in the earth's surface in response to the seismic event; and

creating a set of data representing the changes.

59. (Currently Amended) A method according to Claim 58, wherein the object beams and ~~Oreference~~ reference beams are laser beams.

60. (Previously Presented) A method according to Claim 58, wherein the object beams are directed to different areas on the surface of the object.

61. (Previously Presented) A method according to Claim 58, wherein the detector arrays have different sensitivity directions.

62. (Previously Presented) A method according to Claim 58, wherein the seismic event is applied to sea bed and the instrument is deployed in the vicinity of the sea bed.

63. (Currently Amended) A method according to Claim 58, ~~which additionally includes~~ further comprising the step of filtering out of the data, movement of the instrument and any incidental displacements of the instrument.

64. (Currently Amended) A method of producing a seismic survey report of a region ~~which comprises~~ comprising: carrying out a method as claimed in Claim 58, analysing the set of data to derive representations of underlying strata, and assembling the representations as a depiction of the geological nature of the region.